XIRRUS
High Performance Wireless Networks

September 13, 2013

Marlene H. Dortch
Secretary
Federal Communication Commission
445 12th Street SW
Washington, DC 20554

RE: FCC Rulemaking-Modernizing the E-Rate Program for Schools & Libraries
WC Docket No. 13-184

Dear Ms. Dortch;

On behalf of Xirrus, Inc., our employees, as well as our K-12 and library stakeholders across all 50 states: we would like to thank you for the opportunity to comment on FCC Docket Number 13-184-Modernizing the E-Rate program for Schools and Libraries Program.

We would also like to also applaud the FCC for the leadership role they have taken in supporting the schools and libraries program (E-Rate) and in overseeing the deployment of higher level connectivity and communications across the United States and its territories.

Xirrus, Inc. is submitting comment on several issues raised in the NPRM (WC Docket No. 13-184):

¶ 7—**ConnectED-1st Goal of the NPRM**
We fully support President Obama's ConnectEd initiative as well as the FCC's efforts as outlined in the 1st Goal of the NPRM to launch "E-rate 2.0". We believe that modernizing the E-rate program, to fully reflect the goals of the National Broadband Plan, as well as the National Education Plan makes sense and must become a priority if the children of the United States are going to stay competitive in a global economy. To this end making broadband available to each school site as well as the Wireless infrastructure to deliver the broadband speed required for the end user is mission critical for the success of E-rate 2.0.

¶20—**Proposed Broadband Measurement**
We support and recommend a measured and systemic approach to evaluate network performance metrics. The delineation of standardized metrics & data collection tools and data analysis is of critical importance. We would also support the publishing of the results in an open database searchable by the general public. This will allow for accountability and review by all stakeholders and interested citizens. This will also give measured reports on the progress of the E-rate programs efforts toward meeting established bandwidth target goals. We believe that this will allow E-rate eligible entities to follow successful, best practices and processes. The availability of standardized measures and reporting will allow for network architecture and design decisions that will give insight on how to best implement the target goals.

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¶ 21, 22, & 27--**Measurement & Coverage in the School & Classroom of Broadband**
We recommend that the actual density (# of active devices) and throughput to the devices be the measure of success and not just the coverage of access points. To establish a functional level of Wi-Fi service in a school or classroom it must be assessed and evaluated for not only ample wireless coverage but the throughput into a dense environment of 1:1 or greater. The digital education revolution is going to continue to put more pressure on the Wi-Fi access inside the classroom and school. The inclusion of not only access points but arrays that are built for 1:1 learning situations must be considered in a design or plan. The digital classroom is where much of the bandwidth growth is now occurring and even more so in the coming years. , a minimum of 240 Mbps actual throughput performance with correctly designed spectrum allocation, assuming 40 students per classroom at 6 Mbps each, and allowing headroom for larger classrooms

¶ 143—**Internal Broadband Connections**
The school Local Area Network (LAN) is the "last leg" that is critical for delivering educational applications to the students. The Internal Broadband connection relies on Wi-Fi to deliver to the wireless devices. Designing and installing a solid Wi-Fi network is crucial to the success of the digital learning systems. We recommend that rather than 1 access point per classroom as the standard, but rather the minimum required for each room. Density of devises and applications may and will require more than one access point. Arrays and access point needs can be determined by the proper planning and design of the schools wireless

Recommendations
Xirrus, Inc. currently serves more than 3,800 schools and libraries in the United states and its territories. Working so closely with the K-12 and higher education communities has allowed us to gain valuable insights into the needs of the schools and libraries. It is clear that E-rate has been THE critical funding program for bringing `technology into the schools. The success of the program has been successful beyond the initial goals and hopes of the program. Education is at the crux of a fantastic, innovative age of learning. Digital learning provides a whole new way for students to learn experientially. It is with this revolution in learning in mind that we make the following Recommendations for E-rate 2.0.

1. **Funding**—E-Rate must increase funding to support the new technology initiatives that are being mandated for our schools and libraries. Unfunded mandates create a burden that our local Education agencies cannot be expected to fulfill successfully. The current funding levels are virtually the same since the inception of the program. The current funding levels are inadequate, with the requests out numbering the available funds. It is imperative that the fund be increased to a minimum of $4.5-6 Billion annually to meet the current and future needs for technology intensive classrooms and libraries. Without the funding for this program increasing, there is no way that schools can provide the mandated digital learning environments that will keep our children on course to excel. Failure to increase the funding will do doubt result in a failure for our children.

2. **Build Cost Effective Networks (WAN/LAN)—**The FCC should promote the design and installation of WAN/LAN networks that provide enough capacity to not only meet the needs now, but have the capacity and performance to handle the growth in the future.

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The connected classroom is no longer just a brick and mortar building and room. It is evolving into a virtual classroom. One that must be capable of delivering content rich content to the classroom, the mobile device of choice and to the home. The key to success is the design and installation of a comprehensive network (both structured cabling and Wi-Fi) that will do so at all times. Poor design and planning will result in schools and libraries having to install, update and re-install networks to handle the demand. To do so would be horribly inefficient and cost prohibitive. These networks should be planned and designed right the first time. The networks should also include enterprise level broadband connections to each site as well as network solutions that will enable to stay operational 24x7.

3. **Eliminate the current Prioritization System—**The current emphasis of Priority-1 over Priority-2 has caused eligible agencies to continue to purchase technology and services that is best, out dated and in many cases, inefficient. This has resulted in the over use of Priority 1 services and the virtual demise of Priority 2 funding for 90+ of the eligible entities. Xirrus, Inc. recommends that the funding prioritization reflect the first stated goal of the NPRM: Broadband and the wireless infrastructure to deliver to the end user, our students. The current prioritization does nothing to meet the stated goals for E-rate 2.0.

4. **Bold Goals**—The FCC must set very bold goals to mandate future bandwidth needs and infrastructure performance. In a very short time, schools will be requiring/demanding a minimum of 1 GB per site. Schools that utilize Wireless devices for standardized testing may require more than that. As more technology is adopted daily by the teachers, the strain on the network will grow exponentially. Establishing aggressive minimum standards will allow the eligible entities to keep pace with the explosive growth of digital learning tools and high definition media that is increasing each day. Xirrus, Inc. recommends that by 2014, all schools in America have Internet access of 1 Gbps per 2,000 students (or 0.5 Mbps per student) and by 2018 increase that number four-fold, to 4 Gbps per 2,000 students (or 2 Mbps per student). In addition, Xirrus, Inc. recommends that Wi-Fi LAN networks should be designed to the 802.11 ac standard as well as show an upgrade path for future standards. Annual evaluation of delivery to the end user should be assessed to determine the effectiveness of the delivery speed to the end user. In short, Xirrus believes the internal network should be 4-5 times the speed of the external internet connection.

Conclusion

Xirrus has proven time and time again our commitment to education and we are deeply committed to establishing and growing effective public-private partnerships within the education sector. Again, our list of education agency partner reflects our commitment to education.

E-rate 2.0—the time for a major overhaul of the E-rate program is now! we have a “game changing” opportunity to harness the acceleration of technology and use it to effectively teach our children. This opportunity must be seized now and must reflect the stated goals of the ConnectED initiative and the NPRM goals.

We must get this right. Let us put the needs of the child first and remodel this program to be at least as effective as the original E-rate program, but with a direct impact on each child's learning experience. E-rate 2.0 allows us to build what is needed to directly impact the education of each child within the Unites States of America's purview.

We, at Xirrus, Inc. ask that the FCC and policy makers step up to the plate and make e-rate 2.0 the bridge to deliver our children into the Digital Learning Revolution. Let us all agree to transform teaching and learning in a way that will be benefit future generations of America to come. We hope that policymakers take advantage of this opportunity, and Xirrus, Inc. stands ready to assist in any way possible.

Sincerely,

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